

As an initial matter, Applicants point out that the pending claims reflect amendments made under Article 19 in PCT application PCT/JP04/05786, of which the present application is the U.S. national phase.

As stated in the International Preliminary Report on Patentability for PCT/JP04/05786, claims 1-50 of the present application share the following feature: A visible-light-responsive three-dimensional fine cell-structured photocatalytic filter, a titanium oxide coating is formed on a surface of a sponge-like porous structural body having a porosity of 85 vol% or more. Applicants contend that this feature is not disclosed in, and is not obvious over, Japanese Patent Application No. 02-691751 (cited in the Office Action).

Japanese Patent Application No. 02-691751 describes adsorption of bad odor by physical adsorption using activated carbon. As recited in Japanese Patent Application No. 02-691751, this disclosure of the reference is limited to a substrate having a three-dimensional network structure and carrying activated carbon and a photocatalyst.

In contrast, the three-dimensional fine cell-structured photocatalytic filter according to the pending claims does not require an activated-carbon coating. Thus, Applicants contend that the presently-claimed subject matter patentably distinguishes over the cited reference.

In particular, the cited Japanese patent reference discloses that the removal ratio of dimethyl sulfide is decreased when the weight ratio of titanium oxide to activated carbon is more than 1 (see Japanese Patent Application No. 02-691751, Fig. 5 of Example 13). In view of this, the cited Japanese patent reference discloses that such a weight ratio was set to 0.3 (in the examples of Japanese Patent Application No. 02-691751, see, e.g., Examples 1 and 4). These results show that, according to the cited reference, it is the effect of activated carbon (i.e., the effect of activated carbon adsorbing organic compounds), but not the effect of a photocatalyst, that is significant.

Further, according to JP02-691751, covering the surface of activated carbon with a photocatalytic active compound will close up the micropores of the activated carbon.

This would make it less likely, or impossible, for the activated carbon to physically adsorb bad odor (which is an objective of JP02-691751). Thus, the surface of activated carbon needs to be exposed to the outside in order for the micropores of the carbon to physically adsorb bad odor.

In addition, the density of activated carbon is generally about in the range of 0.24 to 0.50 g/cm³, whereas that of anatase-type titanium dioxide is 3.9 g/cm³. Thus, when the weight ratio of titanium oxide to activated carbon is set to 0.3 as described above, the volume ratio of titanium oxide to activated carbon is only in the range of 0.02 to 0.04. Even when such a weight ratio is set to 1, the volume ratio is only in the range of 0.06 to 0.1. Furthermore, JP02-691751 discloses (e.g., at Col. 5, lines 43-50) that “No decomposition reaction occurs unless a photocatalytic active component exists in the vicinity of a molecule adsorbed by the activated carbon. Thus, it is undesirable to layer or to nonuniformly disperse the activated carbon and the active component” (emphasis added). Thus, JP02-691751 clearly suggests a uniform dispersion of titanium oxide in a volume that is extremely small in relation to the volume of activated carbon. Applicants respectfully contend that JP02-691751 does not describe forming a titanium oxide coating on the surface of a sponge-like porous structural body, as recited by the present claims, and does not teach or suggest the subject matter of the pending claims.

In view of the foregoing, Applicants submit that the present claims are not anticipated by or obvious over JP02-691751, and that the claims share the same or corresponding special technical features so as to relate to a single general inventive concept under PCT Rule 13.1

Applicants respectfully request reconsideration of the Restriction Requirement for at least the foregoing reasons, and because consideration and examination of the groups specified in the Office Action should not impose an undue burden. Additionally, significant expense and time would be saved if all of the groups (i.e., all pending claims) were searched and examined at this time.

Nonetheless, to provide a complete response, Applicants elect with traverse the claims of Group II, claims 8-10, 12, 13, 19-22, 28-35 and 50, drawn to a visible-light-responsive three-dimensional fine cell-structured photocatalytic filter, in which a sponge-like porous structural material contains at least one material selected from the group consisting of silicon carbide, silicon, silicon alloy and carbon.

The selection of Group II is being made solely to comply with the Restriction Requirement and the right to file divisional applications on non-elected subject matter is reserved.

Conclusion

Early and favorable consideration of the application is earnestly solicited.

Applicants conditionally petition for any necessary extension of time. In the event that any additional claim fees (or other fees) are required as a result of this amendment, the Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 04-1105, under Order No. 64350 (70904).

Respectfully submitted,

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